



# Australian Bureau of Statistics

## 1350.0 - Australian Economic Indicators, Apr 2002

ARCHIVED ISSUE Released at 11:30 AM (CANBERRA TIME) 28/03/2002

### Treatment of foreign exchange gains and losses in macro-economic statistics

This article was published in **Australian Economic Indicators** (Cat. No. 1350.0), April 2002

#### INTRODUCTION

The Australian Bureau of Statistics (ABS) compiles a wide range of economic statistics to assist analysis of the performance of the various components of the Australian economy over time. Core sets of these statistics are organised into sets of economic accounts, such as the national and international accounts. These accounts are compiled according to international standards to ensure coherence and consistency. International standards prescribe methods of valuation of stocks and flows and methods of tracking and recording changes in these valuations over time.

Australia has an open economy, with a floating exchange rate regime and deregulated financial markets. As a result, Australian enterprises with dealings in foreign currencies are exposed to exchange rate fluctuations. A significant cause of changes in the valuation of financial assets and liabilities over time, and hence the positions between domestic sectors, and between Australia and the rest of the world, is changes in the exchange rate between the currency in which financial instruments are denominated, for example \$US, and the Australian dollars in which Australia's accounts are compiled.

The volatility in exchange rates and the resulting foreign currency exposures have led to the use of increasingly complex techniques to manage these exposures. The exposures are managed through derivatives which are financial asset and liabilities in their own right, and need to be valued for inclusion in the economic accounts. This article presents an overview of the concepts and methods of reporting foreign exchange gains and losses and the derivatives used to manage foreign exchange exposure in macro-economic statistics.

#### ABS MACRO-ECONOMIC STATISTICS

Economic account statistics, such as the national and international accounts and government finance statistics, organise and aggregate economic statistics into a systematic and comprehensive picture of economic activity. These accounts need to be accurate and relevant if they are to provide useful information for the analysis of current policy issues. To achieve these aims, as well as to allow international comparability, the economic account statistics are compiled and presented in accordance with harmonised international statistical standards. These standards are set out in the 1993 Edition of the **System of National Accounts (SNA93)**, the Fifth Edition of the International Monetary Fund's (IMF) **Balance of Payments Manual (BPM5)** and the **IMF's Government Finance Statistics Manual** (2001 edition).

One aspect of the usefulness of the economic accounts as an analytical tool relies on their ability to provide a

systematic summary of numerous and varied economic activities using standard concepts and valuation methods. In particular, international statistical standards require transactions in, and stock levels of, assets and liabilities to be presented at their current market value. Market value is for all practical purposes equivalent to the fair value concept used in business accounting standards, and is defined as the amount of money a willing buyer pays to acquire something from a willing seller, when such an exchange is between independent parties and one into which only commercial considerations enter. This results in the economic accounts measuring the current exchange value of all assets and liabilities in current money terms, that is the value at which they are transacted, or could be exchanged, for cash.

There is widespread user interest in the economic performance and wealth of the various sectors in the economy. For the economy as a whole, the position of assets less liabilities in the balance sheet provides an indication of national wealth. For an institutional sector, the net position of assets and liabilities provides an indicator of economic status when measured using current market values. Corporations are exposed to numerous risks such as credit risk, liquidity risk, exchange rate risk, interest rate fluctuations, movements in market prices and counterparty risk. Market value measures the current exchange value of all assets and liabilities in current money terms, and measures the impact of these risks on economic performance more accurately than the use of alternative methods of valuation such as book value, which is likely to misstate the values of instruments and be applied asymmetrically by transactors.

To produce a consistent set of financial accounts by sector, the assets owned by one sector must be valued on the same basis as the corresponding liability of another sector. If these asset/liability pairs are valued in different ways, say one at face value and one at market value, inter-sectoral positions are misstated in economy-wide accounts. Market valuation is the most reliable way of valuing these pairs in a consistent manner as it is based on observed prices, that is the price at which an instrument actually trades. Similarly, it is important that each side of a transaction be valued on the same basis. Business accounting treatment may be different, in that there is no requirement for the asset/liability pairs to be recognised and valued the same by both parties.

It is not always possible to observe a market price for a financial instrument, and in these cases the best available proxy must be used. Assets and liabilities will often be recorded in enterprise accounts at the price levels ruling at the time of acquisition, since accounting treatments are often primarily historic cost focussed. The value at which the asset or liability is recorded in financial statements is known as the book value. For non-current assets, the book

value is generally the historical cost which represents the amount paid for the asset. For financial instruments, face value, which is equivalent to the principal repayable to the asset holder at maturity, is often used. These value concepts can often differ significantly from the current market value of an asset.

The difficulty associated with obtaining current market price for some assets and liabilities is recognised, particularly those which are only rarely transacted, and practical valuation guidelines are provided to assist respondents in ABS surveys in approximating market valuation as closely as possible. For some non-equity instruments (essentially loans, deposits and accounts receivable or payable) face value is regarded as a reasonable approximation of market value as these instruments can be realised on demand or at short notice for their face value, or cannot be transferred readily from one entity to another. For equity investment in unlisted enterprises, where a market value of the shares is not available, the survey respondent is asked to estimate the market value by one of the following methods (in descending order of preference): a recent transaction price; director's valuation; or net asset value. The market value for debt securities is sought on one of the following bases (in descending order of preference): yield to maturity; discounted present value; face value less written down value of discount; issue price plus amortisation of discount; or another mark-to-market basis.

An element in market price valuation is the conversion of financial assets, liabilities and transactions expressed in foreign currency to Australian dollars. International statistical standards state that, in principle, they should be converted at exchange rates ruling at the reference date.

## **FOREIGN EXCHANGE GAINS AND LOSSES**

International statistical standards stipulate that each asset, liability, income and expenditure arising from entering into a foreign-currency-denominated transaction should initially be measured and brought to account in Australian dollars using the exchange rate in effect at the date of the transaction. At reference dates subsequent to the initial transaction, foreign-currency-denominated assets and liabilities are converted at current exchange rates to determine the domestic currency values. Exchange rate gains and losses are not treated as transactions in the economic accounts, but appear as valuation changes in the reconciliation of the value of assets and liabilities at the beginning of the accounting period with the values of assets and liabilities at the end of the period.

This treatment can be illustrated in the following example involving the raising of a foreign currency liability. Consider an Australian enterprise requiring a 12 month loan in Australian dollars to fund its local operations. The Australian

enterprise finds it can reduce costs by borrowing in a foreign currency, and enters into a loan with overseas lenders for \$US100. If this loan was raised on the 1 November 2000, and the \$A/\$US exchange rate on this date was 0.5240, then this transaction would be reported in the financial account of the Balance of Payments at \$A190.84. At the end of the December quarter 2000 this liability had not been repaid. The \$A equivalent of \$A179.05 as at the 31 December 2000 is calculated using the exchange rate of 0.5585 prevailing at this reference date. The reduction in the liability of \$A11.79 is caused by a foreign exchange gain during the quarter, and is recorded as a valuation change in the International Investment Position statistics. This foreign exchange gain is not a transaction, so it has no impact on Balance of Payments statistics.

The reason that foreign exchange gains and losses are not recorded as transactions in economic statistics is that transactions generally involve an exchange of economic benefits between two parties. A foreign exchange gain or loss, on the other hand, does not give rise to such an exchange. However, when foreign exchange gains or losses are realised in a transaction involving the disposal of an asset or a repayment of a liability denominated in a foreign currency, then the realised gains or losses will be reflected in the Australian dollar value recorded for the relevant transaction.

An important consequence of this is that foreign exchange gains and losses do not affect income as measured in economic accounts, which can only arise from transactions. But foreign exchange gains and losses do affect wealth as recorded in balance sheets through the market valuation process described above.

## **FOREIGN EXCHANGE GAINS AND LOSSES ON DERIVATIVE CONTRACTS**

Continuing volatility in exchange rates has seen increased use of financial derivatives by Australian enterprises for hedging purposes as part of foreign exchange risk management practices. Financial derivatives are financial instruments that derive their value by reference to the price of a specific underlying financial instrument, indicator or commodity. In compiling economic statistics, financial derivatives are treated as financial assets and liabilities since they can be considered to be a store of value. Transactions involving derivatives are recorded as transactions in this type of financial asset, and not transactions in the underlying assets to which they may be linked.

A common reason for Australian enterprises entering into derivative contracts is to hedge foreign currency exposure. Hedging describes a financial technique used to offset the risk of loss from price (in this case exchange rate) fluctuations in the market. For example, the borrower referred to above has an exposure resulting from his financing

of his normal business activities and may wish to limit his exposure to exchange rate fluctuations by entering into a particular form of derivative contract with a counterparty prepared to take on the exposure. The most common types of derivative contracts used for hedging foreign exchange exposures in Australia are forward contracts, foreign exchange swaps, cross currency interest rate swaps, and currency options. Forward contracts are contracts to buy or sell \$A in exchange for foreign currency at a pre-agreed exchange rate at a specified future date. Foreign exchange swaps combine a spot exchange of two currencies with a forward transaction that reverses the initial exchange (though generally at a different exchange rate). Cross-currency interest rate swaps involve the exchange of the values of streams of interest payments in different currencies for an agreed period of time and the exchange of the values of principal amounts in different currencies at a pre-agreed exchange rate at maturity. Currency options grant the holder the right, but not the obligation, to exchange \$A for a foreign currency at a specified exchange rate at a future date.

It is important to note that not all derivative contracts recorded in the economic accounts are for the purpose of hedging, that is for the purpose of offsetting risk of loss from exchange rate fluctuations. For example, a cross-currency interest rate swap can be used to alter the cash flows, and therefore risk, of existing funding arrangements. Financial derivatives may also be used for other purposes such as speculation and arbitrage between markets. Also, derivative contracts denominated in foreign currency can be between resident and non-resident counterparties or between two resident counterparties.

### Market Value of a Derivative Contract

As with all financial assets, derivative contracts are measured in ABS economic statistics at their current market value. This market value is equivalent to the mark-to-market value of a derivative contract which shows the expected close out value of the contract. Whether the market value of each individual contract is positive or negative determines the classification to either net asset (in the money) position or net liability (out of the money) position. A derivative contract derives its value from the principle that the underlying asset is valued in the statistical system at its current, not contract, price. For traded contracts prevailing market prices are used. For non-traded option-type contracts, market value is approximated using a pricing formula, such as the Black-Scholes formula. Market values for non-traded forward-type contracts are estimated using the present values of future net cash flows. These future net cash flows are determined from the difference between the contract value and the expected prevailing market value of the underlying asset on the future settlement dates. Transactions in financial derivatives

are recorded when financial derivative contracts are created, traded or settled.

In the example presented earlier in this article, the Australian borrower is faced with the risk of a future foreign exchange loss if the \$A depreciates since the borrower is required to repay the loan principal in 12 months time in \$US. Suppose that on the date of the raising of the loan, the Australian borrower enters into a foreign exchange swap with a non-resident financial institution for the purpose of hedging the foreign exchange exposure. Under this contract, the Australian borrower and a counter-party swap currencies at the current spot exchange rate, and agree to swap them back on the maturity date of the original \$US loan at the 12 month forward rate which, for simplicity, is assumed to equal the current spot rate of 0.5240. This locks in repayment obligations with certainty, and the loan is fixed in domestic currency terms by this derivative contract.

At the inception of this derivative contract, the Australian enterprise delivers the \$US100 received from the loan to the counter-party in exchange for \$A190.84. This is recorded as a zero transaction in financial derivatives since the net settlement value in \$A terms is zero. The market value of this contract is also zero at the inception, since the prevailing market rate and contract rate of the 12 month \$A/\$US swap contract are equal. In position statistics, as exchange rates change over time, this contract will be in either a net asset position (in the money) or net liability position (out of the money) based on the difference between the contract and prevailing market rate.

On 31 December 2000 the prevailing \$A/\$US spot rate is 0.5585. Assuming that the 1 November 2001 forward rate is equal to this spot rate, the gross expected receivable under the swap contract is \$A179.05 (\$US100/0.5585), with a gross payable of \$A190.84. On this date, the swap is in a net liability position of \$A11.79, which is equal to the unrealised foreign exchange gain on the underlying loan. Taken together, the total liability of the Australian enterprise is \$A190.84, which is the same amount, in Australian dollar terms, as the original borrowing. Including the swap contract in the position statement and valuing it at its market value more accurately reflects the economic position of the enterprise, which in this case has eliminated its overall exposure to foreign exchange movements through the use of the hedge.

#### Notional Value of a Derivative Contract

The ABS collects and publishes data on the current market value of all derivative contracts, including those entered into for hedging purposes. However, these data, by themselves, do not show the extent to which enterprises have hedged the net positions of their foreign-currency-denominated assets and liabilities. One way to

obtain an approximate measure is to collect information on the notional value of derivative contracts. To illustrate the difference between the market value of a derivative contract and its notional value, the example of a hedge on a loan in \$US given above can be used. The example illustrates the derivation of the market price of the contract, namely \$A11.79. However, the derivative contract was entered into to cover the exchange rate exposure on a loan of \$US100, so its notional value is \$US100. Such notional values are not needed for any national or international economic accounting aggregates and, accordingly, are not normally collected by the ABS. To obtain a more complete picture, the ABS, with the assistance of the RBA, supplemented the Survey of International Investment with additional information on foreign currency hedging from a wide range of enterprises, both financial and non-financial. The aim of the supplement was to capture quantitative and qualitative data about Australian enterprises' foreign currency exposure and the risk management practices associated with that exposure. An article containing the results of this survey is included in this issue of AEI on page 17.

## **SUMMARY OF TREATMENT IN NATIONAL AND INTERNATIONAL ACCOUNTS**

The treatment of foreign exchange gains and losses in national and international accounts is consistent with the principles outlined in SNA93 and BPM5. Foreign exchange gains and losses, in common with other capital gains or losses, are not treated as income or expenditure in the economic accounts. They are wealth effects, not income effects, and are therefore treated as valuation changes.

Transactions in financial derivatives are treated as financial transactions in assets and liabilities and the foreign exchange holding gains and losses associated with financial derivatives are reported as valuation changes.

Only derivative contracts between resident and non-resident counterparties are included in international accounts, with transactions reported in the Balance of Payments' financial account and foreign exchange gains and losses in these contracts reported as valuation changes in International Investment Position statistics.

For further details, refer to **Australian National Accounts: Concepts, Sources and Methods (Cat. no. 5216.0)** and **Balance of Payments and International Investment Position, Australia: Concepts, Sources and Methods (Cat. no. 5331.0)**. These publications are available on this site .

## **SUMMARY OF TREATMENT IN GOVERNMENT FINANCE STATISTICS (GFS)**

The treatment of foreign exchange gains and losses in ABS government finance statistics is consistent with the

treatment recommended in SNA93/ BPM5 and the IMF's Government Finance Statistics Manual (2001 edition). Such gains and losses are not treated as financial transactions but as "other economic flows" and have no impact on the two analytical balances "GFS net operating balance" and "GFS net lending/borrowing" derived in the GFS Operating Statement. However, they do have an impact on net worth - the analytical balance derived from the balance sheet. Transactions in financial derivatives are treated as financial transactions in assets and liabilities, and foreign exchange holding gains and losses associated with financial derivatives are treated as other economic flows. These transactions and holding gains and losses have no impact on the two analytical balances derived in the GFS Operating Statement. They do have an impact on net worth.

For further details, refer to Government Finance Statistics, **Australia: Concepts, Sources and Methods (ABS Cat. no. 5514.0)**.

## **FURTHER INFORMATION**

For further information on the Treatment of Foreign Exchange Gains and Losses please contact Darren Page on 02 6252 6731 or by email [\*\*darren.page@abs.gov.au\*\*](mailto:darren.page@abs.gov.au)

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This page last updated 20 June 2006

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